

evolution of complex from simple structures. John Hunter embodied this method in the arrangement of his museum; Gegenbaur developed it in his lectures and his books.

But many systematists, whose chief aim in life is to study the differences with which they hedge round their multitudes of species, view with suspicion a method of studying zoology which lays chief stress upon the resemblances that help us to link together the various members of the animal kingdom.

Thus Prof. Bütschli's text-book, continuing as it does the best traditions of the famous Heidelberg school, is sure of a warm welcome from the morphologist, whatever view the species-monger and the devotees of the type-system of teaching zoology may think of it.

It was with mixed feelings that those who had been "brought up" on Gegenbaur's great book and had come to revere the great master, read the new edition of the *Comparative Anatomy* which was issued twelve years ago, after he had passed three score and ten years. When a man has reached that age it becomes impossible to keep in touch with all the manifold ramifications of such a science as morphology, even when, as in the late Prof. Gegenbaur's case, he had grown up with it and taken a principal, if not the leading, part in making the new branch of learning.

It required a younger man to write the new and simplified book that was urgently wanted; and no one was more fitted to undertake this task than Gegenbaur's pupil, who took charge of the course of lectures in zoology at Heidelberg in 1884, when his teacher relinquished the task. It is these lectures which are embodied in the book under consideration. The English student who may have spent weary hours trying to puzzle out the meaning of some of Gegenbaur's cryptic German and involved sentences will appreciate the lucidity of Bütschli's style and the ease with which his meaning can be grasped.

This volume represents only the first part of the text-book, and consists of four sections:—(1) An introduction, explaining terminology, and the scope and general conceptions of comparative anatomy; (2) a very complete, yet concise, summary of the distinctive features of all the considerable groups of animals; (3) the comparative anatomy of protozoa; and, finally (4), more than three-fourths of the volume are devoted to the account of the tegumentary and skeletal systems.

The integument and its various specialisations, scales, hairs, feathers, and glands, receive very full treatment. This is all the more welcome and valuable, as this branch of anatomy suffers from neglect more often perhaps than any other. A great mass of information concerning both invertebrates and vertebrates is crowded into a comparatively small space without any sacrifice of clearness.

After a general discussion of the nature of skeletal structures and the forms they assume in invertebrates, the early forms of the notochord are described, and then a succinct account is given of the forms assumed by each bone of the skeleton in the vertebrata.

One of the great features of this book is the abundance and the excellent educational value of the illus-

trations. Although they consist of semi-diagrammatic line drawings or half-tone reproductions of simple drawings, they are so free from unnecessary and confusing detail, so clearly labelled and really illustrative of the text, that the reader experiences no difficulty in following and understanding the descriptions.

Prof. Bütschli can be congratulated on having produced the first part of an introduction to comparative anatomy which is both of exceptional scientific merit and singularly well adapted to the needs of elementary students.

G. E. S.

#### THE BENIN GROUP OF NEGROES.

*Anthropological Report on the Edo-speaking Peoples of Nigeria.* By N. W. Thomas. Part i., Law and Custom. Pp. 163. Part ii., Linguistics. Pp. ix+251. (London: Harrison and Sons, 1910.)

THE Niger Delta, from Yorubaland on the west to the Cross River on the east, is a field of African ethnology which is only very slightly made known to us at the present day, but promises to yield some very interesting and important additions to our knowledge of negro races, when fully worked. Owing to its physical conditions, the area covered by the delta of this river—some 260 miles by 100—is still unexplored in some portions; indeed, down to about fifteen years ago the land everywhere at a distance of one mile from the banks of the navigable creeks had scarcely been seen by a European. Though there are within the delta tracts of undulating, well-drained soil much of the district is excessively swampy or covered with very dense bush, scrub, mangrove thicket, or magnificent but impenetrable forest. Mosquitoes and large Tabanid flies swarm and the former serve to inoculate the blood of the European with the germs of malarial and black-water fever. Yet (I write from old personal experience) where there is no native population at hand to supply from its blood the malarial bacilli, the Niger Delta is not necessarily unhealthy to Europeans, and the stinking mud around the mangrove swamps, though it smells mephitically, is not, so far as we know, the cause of any disease.

In addition to the great difficulties of land-transport, which hitherto have limited the routes of the Delta explorers to the water-courses, the disposition of numerous tribes is still very hostile to the European. Consequently from one cause and another, a wholesome fear of savage cannibals and poisoned arrows, of enormous crocodiles, of thunderstorms, lightning, torrential rain and tornadoes of wind, of a sunshine which is sometimes sickeningly hot, of sparsity of food supplies, and dread of fevers and dysentery, we are still very deficient in our knowledge of the tribes of the Niger Delta. Rumours of late from well-informed sources point to the existence in the region between the Forcados and the Nun of a pygmy or dwarfish people said to be yellow-skinned and steatopygous, and speakers of a "clicking" language; from the Rivers Pennington and Middleton comes a singularly savage and prognathous type of negro, so wild and barbarous that it is still (I am informed) difficult to get speech of them.

In addition to these unclassified folk of the least-

known part of the Delta (Forcados to the Nun), the negroes of the Niger mouths and their accessory streams are now arranged in the following ethnic groups. Beginning on the west, the Edo or Benin peoples, treated of in the book under review; the Jekri on the south or south-west of these; the Ijō, south-east of the Edo (Sobo), and especially in the eastern part of the main delta, between the Nun mouth and Opobo; the Ibo, north of the Ijō; the Arō ruling caste (almost semi-Caucasian in their physiognomy and skin-colour), between the Ibo and the Cross river; and the semi-Bantu Kwō and Akwa tribes between the Opobo and the Efik people of Calabar. Some of the Arō men and women resemble the Fula in their clear-cut, delicate profiles, their thin, well-formed lips, and lithe, finely-shaped bodies; and (as already remarked) there are savages from the western part of the delta, which, to the reviewer, seemed of an exceptionally low and brutal type.

The Edo-speaking people of the ancient kingdom or confederation of Benin are mainly the subject of Mr. Northcote Thomas's monograph, though allusions to and some comparisons are made with certain of the other tribes of the Delta and with the Yoruba of Lagos hinterland. Linguistically and racially the Edo group seems to be allied to the Yoruba and also to the E'we family (of Dahome). Their somewhat remarkable civilisation (like that of the Arō and Efik to the east and south, so strikingly superior to the barbarity of the Ijō and Kwō) has come to them from the north and north-east, and may perhaps be traced back to the Songhai culture of mediæval Nigeria.

Mr. Thomas has very little to say about the bronze-casting which has made the culture of Benin famous in ethnology. It seems to have died out almost entirely amongst the Edo people of to-day, who confine themselves to forging brass and iron ornaments and implements.

The work under review deals in part i. first with the affinities of the Edo people and the surrounding tribes, so far as there are any. Then comes a brief sketch of the Edo speech, followed by ethnological notes on this people, between pp. 11 and 123; an appendix on the pronunciation of the Edo speech, together with sample vocabularies for filling up by other inquirers. Also there is an interesting appendix on genealogies and terms and degrees of kinship; and another on suggestions, for other anthropologists, as to the best procedure in photographing African peoples. (Though not without interest these appendices on linguistics and on photography are disappointing to the already trained ethnologist, who expects Mr. Thomas's book to be entirely filled with the results of his own researches.) Part ii. contains (a) a number of interlineally translated texts to illustrate the Edo, Ishan, Kukuruku (and numerous dialects), and Sobo languages; (b) a grammar of the Edo (Bini, Benin) language; (c) a comparative dictionary of the Edo languages and dialects; and (d) an Edo-English dictionary.

The index comes near the end of the first part, and is singularly poor and inadequate. It is strange that this should be so in a work which is sufficiently good and important to merit very full indexing. For it may

be said without more ado that Mr. Northcote Thomas's study of the Edo-speaking people will take a prominent place in ethnological works dealing with the negro. It is all first-rate, first-hand information, and errs only by omission and not by commission. Particularly valuable are the sections dealing with religion and magic; with marriage and birth customs; with native law and trial by ordeal; and the notes on the native calendar. The texts taken down from the many native informants not only exhibit the exact structure of the different languages, but illustrate very effectively the subject-matter of negro stories, the somewhat gross indecency of speech in regard to certain legends, and in general the outlook on the world around them of negroes that have hitherto been almost entirely uninfluenced by the modern European.

In arranging the English version in his comparative dictionary, Mr. Thomas should have invited the assistance of someone acquainted with African zoology. There are no "pheasants" or "crow pheasants" in Africa, and no "badgers." H. H. JOHNSTON.

#### COLOUR AND CONSTITUTION.

*Die Beziehungen zwischen Farbe und Konstitution bei organischen Verbindungen.* By Prof. H. Ley. Pp. viii+246+Taf. ii. (Leipzig: S. Hirzel, 1911.) Price 7 marks.

MANY chemists will welcome Prof. Ley's work on the relations existing between selective absorption and constitution in the case of organic compounds. The subject has attracted considerable attention of late years, and probably more definite conclusions would have already been reached had physicists rather more knowledge of organic chemistry and organic chemists a better acquaintance with physical conceptions.

The work is divided into two parts, 204 pages being devoted to the subject indicated in the title, whilst the remainder of the book deals with the methods of spectroscopic work. Prof. Ley insists at an early stage on the necessity of making no distinction in kind between selective absorption in the visible and ultra-violet regions of the spectrum, and proceeds to a consideration of Beer's law, "extinction-coefficient," and the influences, such as concentration, solvent, and temperature, which cause variation in absorption spectra.

In dealing with the different theories which have been proposed to account for the colour of organic compounds, Prof. Ley starts with the early efforts of Graebe and Liebermann and of Witt, and divides the chromophors into eight groups. One cannot fail to be struck with the universal existence of conjugated double linkages in compounds which show selective absorption, though in the ketenes chromophoric properties seem to be associated with adjacent double linkages. The triple linkage, on the other hand, seems to have little effect, and benzoylphenylacetylene is a colourless compound. The quinonoid constitution of many coloured compounds and H. Kauffmann's more recent development of the auxochrome theory are then discussed, whilst considerable attention is devoted to the influence of the solvent and